Complete Summary

GUIDELINE TITLE

Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Mar. 66 p. [147 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Attention deficit hyperactivity disorder (ADHD)

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Pharmacists
Physician Assistants
Physicians
Psychologists/Non-physician Behavioral Health Clinicians
Social Workers

GUIDELINE OBJECTIVE(S)

- To increase the use of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) or Diagnostic and Statistical Manual for Primary Care (DSM-PC) criteria and screening for other primary conditions and comorbidities for patients newly diagnosed with attention deficit hyperactivity disorder (ADHD)
- To improve the primary care use of psychostimulant medications through a systematic, uniform approach
- To increase the number of clinicians who are utilizing a multimodality approach in treatment planning for children with attention deficit hyperactivity disorder

TARGET POPULATION

Children and adolescents from kindergarten through 12th grade (ages 5 to 18) with suspected or diagnosed attention deficit hyperactivity disorder (ADHD) in the primary care setting

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation

1. Evaluation of key features of attention deficit hyperactivity disorder (ADHD) using Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Diagnostic and Statistical Manual for Primary Care (DSM-IV/DSM-PC) criteria
2. Assessment of and screening for other primary conditions and comorbidities
3. Coordination of care with subspecialties as indicated for those patients with ADHD and a comorbid condition

Management

1. Management of ADHD, including multimodal management by the primary care physician
2. Education of key individuals (parents/family, child, and school personnel)
3. First-line stimulant medications
    - Methylphenidate [Ritalin]
    - Dextroamphetamine [Dexedrine]
    - Amphetamine salts [Adderall]

    - Alternative medications [tricyclic antidepressant (imipramine, desipramine), alpha adrenergic agonist (clonidine, guanfacine), and nontricyclic antidepressant (bupropion)]
4. Maintenance and continuing care

MAJOR OUTCOMES CONSIDERED

- Prevalence of other primary conditions and comorbid conditions in children with attention deficit hyperactivity disorder (ADHD)
- Academic and cognitive performance
- Behavioral and symptom response to therapy
- Development of compensation skills
- Adverse effects of drug therapy

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

No additional description of literature search strategies is available.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Institute Partners: System-Wide Review

The guideline draft, discussion, and measurement specification documents undergo thorough review. Written comments are solicited from clinical, measurement, and management experts from within the member medical groups during an eight-week period of "Critical Review."

Each of the Institute's participating medical groups determines its own process for distributing the guideline and obtaining feedback. Clinicians are asked to suggest modifications based on their understanding of the clinical literature coupled with their clinical expertise. Representatives from all departments involved in implementation and measurement review the guideline to determine its operational impact. Measurement specifications for selected measures are developed by the Institute for Systems Improvement (ICSI) in collaboration with participating medical groups following general implementation of the guideline. The specifications suggest approaches to operationalizing the measure.

Guideline Work Group: Second Draft

Following the completion of the "Critical Review" period, the guideline work group meets 1 to 2 times to review the input received. The original guideline is revised as necessary and a written response is prepared to address each of the suggestions received from medical groups. Two members of the Committee on Evidence-Based Practice carefully review the Critical Review input, the work group responses, and the revised draft of the guideline. They report to the entire committee their assessment of two questions: (1) Have the concerns of the medical groups been adequately addressed? (2) Are the medical groups willing and able to implement the guideline? The committee then either approves the guideline for pilot testing as submitted or negotiates changes with the work group representative present at the meeting.

Pilot Test

Medical groups introduce the guideline at pilot sites, providing training to the clinical staff and incorporating it into the organization's scheduling, computer, and

other practice systems. Evaluation and assessment occurs throughout the pilot test phase, which usually lasts for three months. Comments and suggestions are solicited in the same manner as used during the "Critical Review" phase.

The guideline work group meets to review the pilot sites' experiences and makes the necessary revisions to the guideline; the Committee on Evidence-Based Practice reviews the revised guideline and approves it for implementation.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations for the diagnosis and management of attention deficit hyperactivity disorder (ADHD) in primary care for children and adolescents are presented in the form of two algorithms accompanied by detailed annotations. The Evaluation Algorithm for Attention Deficit Hyperactivity Disorder has 15 components; the Management Algorithm for Attention Deficit Hyperactivity Disorder has additional 14 components (for a total of 29 components). Clinical highlights and selected annotations (numbered to correspond with the algorithm) follow.

Class of evidence (A-D, M, R, X) ratings are defined at the end of the "Major Recommendations" field.

Clinical Highlights for Individual Clinicians

1. Evaluate children/adolescents suspected of having ADHD based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Diagnostic and Statistical Manual for Primary Care (DSM-IV/DSM-PC) diagnostic criteria using consistent and appropriate diagnostic tools. (Annotation #4)
2. Screen all patients for other primary conditions or comorbidities and appropriately refer to subspecialty consultation for further evaluation. (Annotation #5)
3. Coordinate a simultaneous multimodal management plan that involves parent, child, and school-focused interventions. (Annotation #17)
4. Establish communication and intervention linkages with related systems (e.g. schools, mental health, etc.) (Annotations #19, 20, 21)
5. Establish appropriate use of psychostimulants in both initial and ongoing management of patients with ADHD. (Annotation #23)
6. Provide consistent and comprehensive monitoring and care coordination for all patients with ADHD including pharmacologic and non-pharmacologic interventions, identification and management of emerging comorbidities, and the impact of ADHD condition on patients, their families, and schools. (Annotation #27)

Evaluation Algorithm Annotations

4. Evaluate for Key Features of ADHD Using DSM-IV/DSM-PC Criteria

   The evaluation of primary symptoms should include information from multiple sources such as parents, the child, and school personnel. A comprehensive

interview with parents or caregivers including current symptoms and their previous history, past medical and developmental history, school and educational history, family and psychosocial history is most important. There is no single evaluation tool available to make a definitive diagnosis of ADHD. The diagnosis is based on a clinical picture of early onset, significant duration and pervasiveness, and causing functional impairment within the life of the child or adolescent. This can be facilitated through the use of a semistructured interview or questionnaire (Barkley, Behavioral Assessment System for Children [BASC], etc.) with behavior rating scales (ADHD-IV Rating Scale, Child Attention Profile, Conners, etc.) completed by the parents, other caregivers, and school personnel. The American Academy of Pediatrics (AAP) has developed a tool kit, supported by this guideline, to assist clinicians in providing quality care for children with ADHD. This resource provides a basis for a coordinated multidisciplinary system of care including primary care professionals, school personnel, parents, and children. Ordering information may be obtained by accessing their web site: www.aap.org/bookstore or calling 1-888-227-1770.

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), is recognized as the most widely used resource for diagnosis of mental disorders, including ADHD. Alternatively, a manual designed for use in primary care practice, the Diagnostic and Statistical Manual for Primary Care (DSM-PC): Child and Adolescent Version, is now available. The DSM-PC is designed to bridge the gap between pediatric primary care and mental health services. It contains the DSM-IV criteria for childhood mental health disorders including ADHD and related conditions, but also contains useful information on the developmental continuum of behavior, from normal variations to mental disorders. Other components of the evaluation are described at subsequent points within the original guideline document.

A. Symptoms

   ADHD is categorized by the following core symptoms:

   - Inattention
   - Hyperactivity
   - Impulsivity

   Refer to DSM-IV/DSM-PC criteria in the original guideline document for specific behavioral symptoms.

   There are 3 subtypes of the disorder based upon the "often" occurrence of at least 6 of 9 behaviors within the inattention dimension, and 6 of 9 behaviors within the combined hyperactivity/impulsivity dimension:

   - Predominantly inattentive type (meeting criteria for the inattention dimension)
   - Predominantly hyperactive/impulsive type (meeting criteria for the hyperactive/impulsive dimension)
   - Combined type (meeting criteria for both dimensions)

B. Onset

Some behavioral symptoms typically have begun prior to the age of 7 years in most children (see DSM-IV/DSM-PC criteria in the original guideline document). These symptoms may not be obvious in children who are predominantly inattentive without significant hyperactivity or impulsivity. Previous history must be reviewed carefully, especially in older children and adolescents, for the presence of symptoms not previously recognized or identified.

C. Duration

The presence of behavioral symptoms is typically of long duration (at least 6 months - see DSM-IV/DSM-PC criteria in the original guideline document) and previously recognized by parents, teachers, or the patient. Careful review of previous symptoms is critical for evaluation of the presence or absence of symptoms not otherwise identified by parents, school personnel, or other caregivers. It is also helpful to assess the characteristics of previous observers with respect to the validity of information (e.g., specific teacher qualities, home and class room environment).

D. Pervasiveness

Due to the relationship of ADHD symptoms to the external environment, specific interest and motivation, individual demands on attention and focus, and day-to-day influences, there can be significant variability within a given child. Nevertheless, ADHD behaviors are typically present in more than one setting (e.g., home, school, play, or work – see the DSM-IV/DSM-PC criteria).

E. Impairment

ADHD symptoms present in varying degrees of severity and impairment, depending upon individual characteristics and demands. It is important to assess the degree of impairment as the ADHD symptoms relate to the child's or adolescent's social, academic, or family functioning (see DSM-IV/DSM-PC criteria in the original guideline document).

A word about behavior rating scales:

At least one standardized rating scale (see the Discussion and References section in the original guideline document) is recommended for reviewing observations from those persons in direct contact with the child/adolescent (parents, day care providers, teachers, etc.) These observations/ratings should be used as part of the overall historical data base and should not be the sole criteria used to include or exclude the diagnosis of ADHD. Caution should be used in interpreting these due to observer bias, threshold of problem identification, and lack of observer knowledge (especially true of older children/adolescents in middle or upper grades). The ADHD Rating Scale IV is normed based on DSM-IV/DSM-PC criteria and available for current use.

A word about continuous performance tasks:

Various continuous performance tasks (CPT's) have been developed to attempt to objectively measure sustained and selective attention: for example, Test of Variables of Attention (TOVA), Gordon Diagnostic System, Conners CPT, etc. These tasks involve the rapid presentation of stimuli where subjects are asked to respond to specific targets. The results measure certain variables of attention related to errors of omission and commission. Although these instruments appear to discriminate between children with ADHD and their normal counterparts at a group level, the usefulness of these measures in assessing individual children is limited. Due to significant false negative rates (estimated at 15-30%), these instruments are not considered pathognomonic of ADHD and are of limited utility in screening and evaluation. They are most useful in research settings and the complex individual patient where more extensive data may be useful.

Evidence supporting this recommendation is of classes: C, R

5. Screen for Other Primary Conditions and Comorbidities

Many children can exhibit symptoms of ADHD at some point in their development, but it is important to note that common symptoms (inattention, hyperactivity, disruptive behavior, academic difficulty), can be caused by a number of other difficulties. At this stage of the process, the clinician must consider diagnoses other than ADHD in one of two paradigms. Some patients will meet the criteria for ADHD but will also have a comorbid diagnosis or diagnoses ("primary ADHD" with comorbidity). Other patients will have a diagnosis other than ADHD that largely accounts for the behavioral symptoms of inattention, impulsivity, and/or hyperactivity. The latter instance can be conceptualized with an alternative diagnosis as "primary" with secondary features that mimic ADHD.

In screening children and adolescents for other diagnoses, it is important to emphasize the need to include information from as many sources as possible: the patient, parents, teachers, coaches, and health care professionals.

Screening patients for other diagnoses falls into the five basic domains defined in Annotations 5A-5E.

There are a number of possible strategies to consider in the comprehensive screening of the ADHD patient for other problems. One is for the primary care provider to utilize his or her ongoing familiarity and relationship with the family and patient over time to get a sense of any primary or comorbid problems identifiable in the five areas defined in Annotations #5A-5E.

A second strategy would be to use a semi-structured interview format with some "key" questions designed to get at the disorders identified in the five previously described domains.

Another strategy includes the use of "screening" questionnaires which, although not diagnostic, can offer a general sense of potential areas for concern. Examples of utilized instruments are the Achenbach Child Behavior Checklist (CBCL), Teacher Report Form (TRF), Youth Self-report, Devereux Scales of Mental Disorders (DSMD), and the Behavioral Assessment System for Children (BASC). These forms are scored across a number of behavioral domains. Clients who receive scores above a certain cutoff point in any given domain might then be considered for more intensive evaluation around that problem area. Using the instrument properly requires some training. Consultation with a psychologist for assistance in interpretation may be helpful. For additional information, refer to Discussion and Reference #5 in the original guideline document.

Refer to Annotations #6 and 7 in the original guideline document for concurrent assessment of suspected condition(s) and comorbidity(s).

Evidence supporting this recommendation is of classes: C, R

5A. Screen Biomedical Conditions

Note: the screening for the 5 domains (Annotations #5A-5E) will provide data to suspect a differential diagnosis or data to suspect a diagnosis of ADHD.

General Health History and Physical Examination, including:

- Growth parameters: height, weight
- Vital signs: blood pressure, pulse
- Screening of vision and hearing

Special emphasis on:

1. Overall physical appearance
    - Minor physical anomalies may signal genetic abnormalities (low-set ears, large or undescended testicles, high-arched palate, etc.)
2. Signs and symptoms of abuse
3. Neurological examination
    - Abnormalities (e.g., motor or vocal tics, asymmetry or abnormality of reflexes or motor tone, tremors)
    - "Soft signs"

    Subtle neurological signs including difficulty with sequencing, dysrhythmia, mirroring, motor overflow, and clumsiness. "Clumsiness" refers to the performance of fine and/or gross motor tasks in an immature, slow, irregular, or inconsistent fashion. Skills are imprecise rather than grossly impaired. "Soft" neurological signs are present in many children with learning and behavioral disorders.

4. Assessment of developmental status
    a. Observation of child's activity level in examination room, ability to converse appropriately, ability to follow directions, and cooperativeness

b. History of delays or questionable areas:
    - Auditory perception
    - Expressive language
    - Visual and sequential processing
    - Memory
    - Fine and gross motor function
c. Cognitive screening tools

    The provider may find the following helpful. Responses are age dependent.

    - Ask the child to tell about a recent event - birthday, sports event, etc. (Note whether language is fluent, coherent, and organized.)
    - Ask parent if child has difficulty taking telephone messages or retaining classroom instructions, if age appropriate. (Short-term memory)
    - Observe the child using a pencil to copy symbols and words. (Visual perceptual-motor)
    - Ask the child to perform a three-step command. (Sequencing)
    - Ask the child to repeat four words, remember them, and repeat them again when asked in 5 minutes or 10 minutes. (Memory, attention)
    - Ask the child to repeat three, then four digits forward; then repeat three, then four digits backward. (Concentration)

5B. Screen Emotional/Psychiatric Problems

The diagnosis of ADHD may be complicated by either the presence of another coexisting psychiatric condition or the existence of a psychiatric condition which has symptoms suggestive of the diagnosis of attention deficit hyperactivity disorder. It is clear that children with attention deficit hyperactivity disorder are at risk for the coexistence of depression, anxiety disorders, conduct disorders, and substance abuse. The prevalence of these conditions in children with ADHD ranges from 15 to 30 percent. At the same time it is those same four diagnostic entities which may most often be misdiagnosed as ADHD due to the commonality of many of the symptoms. Therefore, it behooves the clinician to screen for those four conditions when evaluating a child for whom the diagnosis of ADHD is being considered. The following may be considered as a starting point in evaluating the possible presence of depression, anxiety disorders, conduct disorders, and substance abuse.

A. Depression
    - Consistent depressed or irritable mood for nearly every day which has lasted for at least two weeks
    - Significantly diminished interest or pleasure in all or almost all activities
    - Undeniable decline in school or work performance
    - Recurrent suicidal ideation without a specific plan or recurrent thoughts of death
    - Persistent depressed mood associated with almost daily insomnia or hypersomnia

B. Childhood Mania-Juvenile Bipolar Disorder

Recent experience suggests an overlap between ADHD and juvenile mania-bipolar disorder. The following are characteristics of childhood mania that may aid the clinician in differentiating the 2 conditions:

- Mania-bipolar disorder is extremely rare when compared to ADHD.
- Patient experiences pressured speech, racing thoughts, grandiosity, reduced need for sleep.
- Symptoms include rapid onset affective storms, prolonged severe temper outbursts, violent furious aggression, irritability, erratic interpersonal behavior.
- Usually mixed presentation with depression.

C. Anxiety Disorder

The diagnosis of post traumatic stress disorder, which falls under the anxiety spectrum, may be the most common diagnosis that mimics ADHD. The most likely areas of post traumatic stress disorder are those that fall in the spectrum of physical or sexual abuse. Those areas should have been screened by taking a psychosocial history as part of the overall assessment. The remaining diagnoses that are likely to present themselves in childhood include those of separation anxiety disorder and generalized anxiety disorder. Screening which may be useful in identifying those conditions is listed below:

- Developmentally inappropriate and excessive anxiety concerning separation from home or from those to whom the child is attached
- Persistent and excessive worry about losing or about possible harm befalling major attachment figures
- Repeated complaints of physical symptoms when separation from major attachment figures occurs or is anticipated
- Consistent excessive dissatisfaction with less than perfect performances (e.g., school assignments)
- The child finds it difficult to control or stop his or her worrying/anxiety.

D. Conduct Disorder

- Presence of negativistic, hostile, and defiant behaviors which may include losing temper, arguing with adults, refusing to comply with adults' requests, deliberately annoying people, consistent anger, and resentment expressed toward others
- Presence of a history of physical aggression toward people or animals
- History of deliberate involvement in theft from others
- History of violation of rules with potential serious consequences (e.g., running away from home, truancy from school)

E. Substance Abuse

- History of use of alcohol or illicit drugs of any kind
- Use of alcohol or drugs to alter mood state or to escape a mood state
- Consequences at school, in the home, or with legal authorities related to the patient's use of alcohol or drugs
- History of a peer expressing concern regarding the patient's use of alcohol or drugs
- History of feeling guilty about use of alcohol or drugs
- Behaviors suggestive of drug or alcohol use (increasing isolation from family/friends, presence of drug paraphernalia)

F. Pervasive Developmental Disorders (e.g., Autistic Disorder, Asperger's Disorder)

Although it is uncommon for ADHD to be confused with autism spectrum disorders, it is not uncommon for children with autism spectrum disorders to present with ADHD features. Typical problem areas for these children include:

- Qualitative impairment in social interaction (e.g., reciprocity, non-verbal gesture, sharing, peer relationships)
- Qualitative impairment in communication (e.g., language delay, conversational speech, idiosyncratic/stereotyped language, symbolic/imitative play)
- Restrictive, repetitive patterns of behavior (e.g., preoccupations, rituals, self-stimulatory motor mannerisms).

5C. Screen Family/Psychosocial Problems

In addition to the evaluation of comorbid psychiatric or learning conditions, it is important to consider the psychosocial context in which the child's symptoms and concerns arise. Identified below are factors to consider and some ideas for interview questions. A thorough assessment of the family's functioning will assist in understanding both the nature and severity of the child's symptoms and the family's ability to make use of education and treatment recommendations.

A. Psychosocial stressors

The experience of chronic or acute stress may manifest in a child's functioning in a variety of ways; common symptoms include anxiety, dysphoria, and behavioral acting out. Any of these difficulties may result in changes in academic performance or behavior in the home environment.

Sample question: Has your family been coping with other difficulties or stressors during the past year or two?

Stressful life events may include:

- Major life transitions or changes (move, change of school)
- Loss (death of loved one, parental separation or divorce)
- Abuse (sexual or physical, domestic violence)
- Traumatic events (e.g., car accident)

B. Family History

Sample question: Has anyone in your family been treated for...?

Evaluate all the following for parents, siblings, and extended family:

- Anxiety disorder
- Depressive disorders (including bipolar disorder)
- Learning/attention problems
- Developmental delay, mental retardation, autism
- Chemical dependency

- Conduct problems
- Other mental health problems

C. Quality of Caregiving

Consider the family's strengths and resources for coping as well as their beliefs and attributions concerning their child's difficulties. Also examine the effects of the child's symptoms on the family as a whole.

Interview caregivers for evidence of family dysfunction or vulnerability. In particular, evaluate for problems which may affect the parents' ability to manage behavior consistently and appropriately, to provide adequate nurturance and structure, and to accurately (meaningfully) evaluate the child's functioning.

These problems may include:

- Parental psychiatric disorder or chemical abuse/dependency
- Cultural differences
- Lack of education or information
- Low intellectual functioning
- The absence of family/community supports
- Psychosocial stressors (see A above)
- Limited nurturance of child

Sample questions:

- What is a typical day like at your home?
- Do you feel supported by the child's school and the community?
- Who provides help with your child when you need it?
- Is there any use of alcohol or illicit drugs in your home?
- Tell me what you've heard or learned about ADHD?
- What kind of discipline works (or doesn't work) with your child?
- When do you enjoy being with your child?

5D. Screen Speech/Language Problems

A. Children with ADHD are more likely than non-disordered children to evidence difficulties in speech and language development, particularly difficulties with expressive language. Any history of speech or language delay or services should be discussed and reviewed. Common difficulties include:
   - Historical or current problems with dysfluencies
   - Disorganized speech on tasks that require verbal explanations
   - Excessive, tangential, or rapid speech
   - Problems with volume modulation
   - Fragmented sentences with pauses
B. Receptive language problems may also be present in children with ADHD or may be a comorbid condition. These children may mimic primary problems with attention and have problems following directions and retaining verbally presented material.
C. Many children with ADHD manifest "pragmatic language dysfunction" in social situations – namely, an inability to read essential verbal, nonverbal, and situational cues. This can lead to a tendency to make socially unacceptable

choices. Over 50% of children with ADHD are likely to have communication/interaction problems that manifest themselves as social skills deficits. The clinician should inquire about evidence of aggressive, domineering, and intrusive social interaction styles as well as difficulty in initiating and maintaining friendships, or even outright rejection by peers.

D. Children with hearing impairment may also present with symptoms of inattention, problems with task completion, disruptive behavior, noncompliance, speech and language problems, or a need for frequent repetition of information. All children being evaluated for ADHD should have had their hearing screened within the previous 12 months. If questions arise, they should be referred to an audiologist for formal evaluation.

5E. Screen Academic/Learning Problems

A. Children with ADHD are at increased risk of struggling academically and are frequently reported as underachieving. The history should include information from parents and teachers to assess common performance areas of difficulty in children with ADHD, which include:
    - Completion of independent work in a timely fashion
    - Attention to detail
    - Studying for exams
    - Taking notes on classroom lectures
    - Organizational skills
    - Time management
    - Self-monitoring

B. Empirical evidence indicates a consistent relationship between ADHD and learning disorders. One in every three to four children with ADHD has a specific academic skill deficit or "learning disability" in a traditionally defined area such as reading, written language, or mathematics. A learning disability is formally identified by comparing a student's IQ score to his or her scores in achievement areas and identifying a significant discrepancy (usually defined as 1.75 to 2 standard deviations) between the two.

    Learning disabilities or disorders as currently defined in the DSM-IV/DSM-PC include:

    - Reading disorder
    - Mathematics disorder
    - Disorder of written expression
    - Developmental coordination disorder

C. Children with subnormal intelligence may appear inattentive, due to their lack of understanding of and tracking with material that is too difficult for them. However, it is also important to note that children with cognitive impairment are three to four times more likely to have ADHD than children with intelligence scores in the normal range. Therefore, an IQ assessment and individual achievement testing may often be essential components of an ADHD evaluation. It is important to note that these children may be misdiagnosed as having a primary attentional problem when in fact their symptoms are secondary to an inappropriate level of difficulty or stimulation in academic programming.

D. It is important to review school concerns with the patient, parents, teachers, and other school professionals. "Red-flags" or common presenting symptoms

of concern for children with learning disabilities or cognitive impairment could include:

- Apparent apathy or hostility toward school
- Avoidance of or failure in specific subject areas
- Disruptive or negative behaviors in certain classes
- Historical evidence of difficulty in specific skill areas
- History of special educational programming, "Chapter 1" assistance, etc.
- History of early childhood service

E. A sample of possible questions directed at children and their parents for assessing academic performance issues presenting in the context of an ADHD evaluation might include:

- What subject is your favorite/easiest?
- What subject is hardest/least favorite?
- How do you get along with your teachers?
- How much homework do you do on an average night? How does this compare to the amount of homework classmates are doing? How much do your parents help you with your homework?
- What grades are you receiving in each of your classes? How does this compare to your grades in previous years? Have you ever failed or are you currently failing any classes?
- Do you receive any special help in school?
- What are your interests outside of school?
- Does your son/daughter have any trouble with study/organizational skills?
- What do you see as your son/daughter's learning style strengths? weaknesses?
- Do you think your child feels positively about school?
- Has anyone from school ever contacted you with specific academic or behavioral concerns about your child?
- Are you pleased with your child's grades?
- Do you feel your son/daughter is working up to his/her potential?

F. Students functioning at the "gifted" end of the cognitive spectrum may also manifest signs or symptoms of ADHD such as inattention, disruptive behavior, and apparent lack of motivation or engagement in classroom activities. It is important to note that these children can be misdiagnosed as having a primary attentional problem when in fact their symptoms are secondary to the lack of an appropriate level of challenge and stimulation in academic programming. Giftedness and ADHD may coexist, however.

6. Are Other Primary Condition(s) or Comorbidity(s) Suspected?

Suspected Alternative Primary Condition

If an alternative primary diagnosis is suspected, the clinician is advised to proceed to step 7 and assist the patient in completion of appropriate evaluation prior to proceeding further in the guideline.

Suspected ADHD with Comorbid Condition

If ADHD is the likely primary diagnosis but a comorbid condition is also suspected, the clinician may choose to proceed to step 11 while concurrent

evaluation of the suspected comorbid problem is completed. This would allow the clinician to continue to move into appropriate management strategies in a time-efficient manner. It is important to consider some degree of caution here in that comorbid issues can be of equal importance to the diagnosis of ADHD. Therefore they must be fully evaluated and the overlapping nature of the conditions (e.g., ADHD and learning disabilities) must be considered prior to moving fully into the management plan. Possible examples might include oppositional defiant disorder, learning disability, etc.

7. Assessment of Suspect Condition(s) and Comorbidity(s)

   For those patients suspected of other conditions or comorbidities, continued assessment is necessary to confirm or exclude such conditions. In these cases further investigation, including subspecialty consultation, may be needed.

   Evidence supporting this recommendation is of classes: C, R

8. Primary Diagnosis Other Than ADHD Accounting for Symptoms?

   Patients undergoing further assessment for biomedical, emotional/psychiatric, family/psychosocial, speech/language, and academic/learning problems may be identified as having a primary diagnosis other than ADHD which accounts for their symptoms. For these patients, symptoms are not due to ADHD; therefore, these patients do not fall within the scope of this guideline. The primary clinician is encouraged to coordinate care with multidisciplinary subspecialty consultation as indicated.

9. Related Comorbidity Identified?

   Patients undergoing assessment for biomedical, emotional/psychiatric, family/psychosocial, speech/ language, and academic/learning problems may be identified as having a related comorbidity to the primary ADHD condition.

10. Desire Subspecialty Consultation for ADHD Medical Management?

    For those patients with ADHD and a comorbid condition identified, the primary clinician is faced with the option of medically managing the ADHD component or utilizing medical subspecialty consultation. This decision depends on the complexity of the comorbid condition and its relationship to the ADHD symptoms, as well as on the individual clinician's own threshold of expertise and knowledge.

    The type of medical subspecialty consultation may include the following:

    - Child-Adolescent Psychiatry
    - Developmental-Behavioral Pediatrics
    - Pediatric Neurology

    The primary care clinician is encouraged to coordinate care between medical and non-medical (e.g., mental health, school/educational, speech/language) subspecialty consultation as indicated.

11. DSM-IV/DSM-PC Criteria Confirmed?

Only after careful evaluation of the patient's primary symptoms and complete screening for any comorbidity or other primary condition is the clinician able to confirm the diagnosis of ADHD.

13. ADHD Diagnostic Formulation

A comprehensive diagnostic formulation for a child with ADHD is critical so that parents clearly understand their child's attentional difficulties as part of an inclusive picture of his or her functioning. Findings should be presented to families within a biopsychosocial framework. Discussion of the ADHD diagnosis should be presented within the context of associated comorbid mental health diagnoses and issues, academic performance issues, learning disabilities, developmental concerns, medical diagnoses, social concerns, family issues, and stressors. It is crucial to discuss the child's and the family's strengths as well as their vulnerabilities. Adequate and appropriate treatment planning should then follow from a comprehensive and accurate diagnostic formulation.

Management Algorithm Annotations

17. Multimodal Management Coordinated by Primary Clinician

After accurate diagnosis of attention deficit hyperactivity disorder, the underlying principle of successful management includes multiple treatment modalities begun simultaneously to address the multidimensional nature of the disorder. The primary clinician is in a unique position to coordinate these interventions from initial diagnosis through ongoing monitoring and continuing care. Subspecialty consultation at any point along this continuum may occur depending on the knowledge and expertise of the primary clinician as well as the complexity of the patient. Despite the need for individualized approaches, there are several general interventions and strategies which effectively address many of the common primary features of ADHD.

Evidence supporting this recommendation is of classes: A, C, M

18. Education of Key Individuals

Upon initial diagnosis of ADHD, education of key individuals including the parents, the child, and school personnel is imperative.

For the parents, this should include information on neurologic mechanisms, common features of ADHD and how they relate to the child's previous and current problems, and future expectations of clinical course and intervention strategies. The importance of individual teacher selection each year should be emphasized.

For the child, a developmentally appropriate explanation and demystification of ADHD using specific metaphors and examples is especially helpful. This

should include not only explanation of related difficulties, but also discussion of the child's strengths and attributes.

For school personnel in contact with the child, one should not assume teacher knowledge of ADHD. It is important to provide specific teacher-focused information for the parents to share with all appropriate individuals. This information not only should explain ADHD related to the child's classroom difficulties, but also should address appropriate intervention strategies and modifications as described in Annotation #7, "Assessment of Suspect Condition(s) and Comorbidity(s)." (see the original guideline document).

19. Parents/Family Focused Strategies

ADHD Support Groups

These groups help parents learn more about ADHD through lectures or reading material and can help parents cope emotionally by communicating with other parents of ADHD children in a supportive setting. The Attention Deficit Disorder Association (ADDA) and Children and Adults with Attention Deficit Disorder (CHADD) are two such groups and have local chapters in many areas. A children's or community hospital in the area may also have a support group.

Advocacy Groups

Groups exist to help parents learn about what rights their children have in the educational setting and what special services are available for their needs. These groups can also aid in parent interactions with the school system and can give parents some direction in finding services for their children. One such group is Parent Advocacy for Children's Educational Rights (PACER).

Parenting Skills Training

One of the most useful strategies a parent can undertake to improve harmony in the home is to learn ways to modify the child's behavior in a manner consistent with school-focused behavior modification. This serves to give the child direction, goals and limits in hopes of improving compliance, behavior, self-esteem, etc. This training can be obtained through formal classes, books, or counseling.

Suggestions for Parents

- Note problem behaviors and make notations of frequency and severity to help make the problems more objective and to aid in monitoring improvements as behavioral changes are made.
- Try to spend 10 to 15 minutes daily focusing on this child alone to listen and let them know they are important.
- Set consistent schedules and routines with forewarning of any upcoming changes.
- One or two simple, clear instructions should be given at a time. The child should repeat the instructions back to ensure comprehension.

- Clear, concise rules should be provided for the behavior of all family members, with consistent follow-through of appropriate consequences and rewards.
- Decrease inappropriate behavior by allowing:
    - Natural consequences to the child's actions
    - Logical consequences linked to the offending behavior
    - Time-outs
- Have a special quiet spot with few distracting influences for doing homework or working on projects.
- Allow the child choices within set limits so that the child has a sense of some control.
- Have the parent take a break or time-out from the child if he or she is becoming too frustrated or angry.
- Make sure the child knows his or her behavior is the issue or problem, not the child himself or herself.

The references in the discussion section of the original guideline contain a more detailed approach to parent skills training.

Comorbidity Present

In cases with significant family dysfunction or other stresses (e.g., financial, health problems, chemical dependency issues) individualized family therapy may be more appropriate. In-home counseling may be available through county services.

Evidence supporting this recommendation is of classes: A, R

20. Child Interventions

The following interventions do not have solid empirical support for the treatment of ADHD and may be more appropriate to address deficits that often co-occur or develop secondarily in individuals with ADHD.

Social Skills Training

The child's social skills are resources for solving the specific problems that arise from ADHD. Interpersonal problems and difficulties with peers may occur secondary to impulsivity (i.e., unpredictable behavior). As a child gets older, unpredictable behavior is less tolerated by peers and within the family.

Social skills building is meant to offer immediate practical skills in a safe setting. Sometimes this can be a way to have several people (family, school, friends) offering the same message about appropriate behavior and may have a better chance of being generalized to a larger setting.

Social skills training (group or individual) instructs children in the execution of specific prosocial behaviors. It is appropriate for children who exhibit difficulties in initiating and maintaining positive peer interactions. Children with ADHD often show deficient use of functional, pragmatic language in social situations. This type of training is designed to increase knowledge

about appropriate and inappropriate social behaviors. The various target skills may include maintaining eye contact, initiating and maintaining conversation, sharing, and cooperating. Role-playing exercises with group feedback are commonly used.

Social skills building groups may be available through the school. These may be recognized as "friendship groups" or "social skills groups." Early childhood family education, which may include children older than the preschool aged child, is also available. Some other community resources may include the YMCA, Community Education, or local health organizations.

Evidence supporting this recommendation is of classes: A, D, R

Problem Solving Strategies/Cognitive Behavioral Therapy

The goal of self-instructional problem solving training is to help children who have ADHD "stop and think" before acting. This therapeutic modality falls under the general category of cognitive-behavioral therapies. Designed to facilitate self-control and reflective problem solving, it is appropriate for children who exhibit impulsive, non-self-controlled behavior and/or manifest deficits in problem solving. This can be accomplished through the use of various resources: family therapy, in-home therapy, an individual therapist, or county services (if available). All options should be coordinated with school efforts.

Evidence supporting this recommendation is of classes: A, R

Study/Organizational Skills Training

Study and organizational skills building should be offered in conjunction with curriculum intervention. The curriculum should be concrete and sequential with only essential information as a requirement. Specific interventions can address issues, such as:

Behavior: Difficulty sequencing and completing steps to accomplish specific tasks (e.g., writing a book report or term paper, organizing paragraphs; solving division problems)

Accommodation: Break task into workable and manageable component tasks. Provide examples to accomplish task.

Behavior: Difficulty prioritizing from most to least important.

Accommodation: Prioritize assignments and activities. Provide a model to help students. Post the model and refer to it often.

Evidence supporting this recommendation is of class: R

Comorbidity Present

In children or adolescents with comorbid anxiety, depression/dysthymia, chemical abuse, oppositional or conduct disorder, medical comorbidity appropriate medical management should be implemented.

21. School Interventions
    A. Even at optimal doses of medication, most children with ADHD have residual difficulties at school. Physicians and other primary health care providers are often in a good position to assist parents in advocating for appropriate school programming for children with ADHD. Several classroom strategies are listed in the table below. Although it is not expected that the primary care provider will act as an expert "consultant" in this area, it is important for him or her to have enough background familiarity with these issues to be an effective advocate and to be able to educate and empower parents on these issues.

       Studies clearly demonstrate that combination therapy of medication and behavioral interventions for ADHD is superior to medication alone. The primary care provider can emphasize the fact that, regardless of the decision to utilize or not utilize medication (e.g., stimulants), the literature supports the fact that children with ADHD clearly benefit from appropriate behavioral management and educational accommodations/modifications in the classroom.
    B. Classroom Strategies for Children with ADHD
        - A high degree of order and predictability to the classroom
        - Clear and consistent rules and expectations
        - Classroom organizational strategies such as a posted daily work schedule, written notices for homework assignments, quiet work areas, seating close to teacher and near positive peer models
        - Training for students in study skills and time management
        - Regularly scheduled, frequent breaks
        - Creation of multisensory learning activities that are engaging and use various attention-getting devices
        - Reduction of the amount of work assigned or other modifications of assignments
        - Liberal use of positive reinforcers immediately and continually for desired behaviors
        - Establishment of a school–home daily note card system to maintain parent–teacher contact with regard to academic and behavioral progress and problem areas
        - Working with the student on self-monitoring, self-reinforcement and development of compensatory/adaptive strategies
    C. Ongoing collaboration and communication between teachers and primary care providers is desirable in order to discuss and implement effective treatment strategies for each child. It is also important for the primary care provider to communicate with school staff about their perceptions of the child's diagnosis (or diagnoses) with particular attention to any medical/neurologic problems (e.g., Tourette Syndrome, mental retardation, seizures, hearing impairment, chronic medical conditions) that might be important for the teachers to understand. They may also want to discuss the perceived role of psychotropic medication and answer any questions about expected benefits, side effects, etc.

D. The severity of the child's ADHD and its adverse impact on academic performance will determine whether the child qualifies for special education services. The three educational service categories most commonly identified for children with ADHD (in school terminology) are Learning Disability (LD), Emotional/Behavioral Disorder (EBD), and Other Health Impaired (OHI). Students with ADHD who do not meet eligibility criteria for the specific programs described (LD, EBD, OHI) may still need some level of assistance to be successful and may still receive specialized instruction and accommodations in the regular classroom. This is stated in section 504 of the Rehabilitation Act of 1973 and is intended to insure a "free and appropriate education in the least restrictive environment" for all students including those with a physical or mental impairment that limits learning. In these cases, parents should be encouraged to formally request a "section 504 plan" for their child from school administration. Adequate documentation of the child's impairment (e.g., ADHD or other diagnosis) will be required from the physician.

Comorbidity Present

Specific learning disabilities comorbid to ADHD must be treated concurrently with appropriate special educational programming. Primary care providers should develop a basic understanding of the Individualized Educational Plan (IEP), the document which details the student's direct and indirect special educational services.

Speech- and language-related difficulties must also be treated and supported across the curriculum and can have an impact on a number of subject areas and tasks. Children with ADHD who are also hearing impaired may require special assistance such as an "auditory trainer" device and other classroom accommodations. Most districts have the availability of a hearing impairment specialist to consult on these clients.

Evidence supporting this recommendation is of classes: A, R

22. Medications Warranted and Desired?

Medication is frequently effective as part of a multimodal treatment plan for ADHD. The decision to use medication to alter behavior should be preceded by thorough deliberation and consideration of expected benefits and potential risks. The decision is influenced by factors such as the child's age, severity of symptoms, presence of comorbidity, and negative or ambivalent parental attitudes regarding medication. A careful and thorough explanation of medications addressing fears, myths, or misconceptions that parents might have may be necessary for an informed consent.

23. First Line Medication(s) Trial(s)

Stimulant medications are considered first-line therapy as they are effective in 70 to 80% of children with ADHD. It is theorized that stimulants increase the availability of neurotransmitters at the presynaptic terminals. This allows

the child to exhibit more purposeful, goal-oriented behavior by focusing attention, lessening impulsiveness, and decreasing motor activity.

Absolute contraindications to the use of stimulants include psychosis, certain cardiovascular conditions, or previous untoward reactions to stimulant medication. Occasionally a comorbid condition may warrant the consideration of alternative medications. In the presence of comorbidity, the primary symptoms of concern should influence the medication decision.

Treatment with psychostimulants is often safe and effective in managing many children with ADHD with mild to moderate tics. Nevertheless, frequency and severity of tics should be carefully monitored in these patients. No routine blood work is necessary before or during psychostimulant therapy.

The three types of stimulant medication most commonly used are:

- Methylphenidate (MPH)
- Dextroamphetamine
- Amphetamine salts

Response to one stimulant does not predict response to the others. Studies indicate a 70 to 80% response rate to each stimulant independent of one another; therefore, if a child is a non-responder to one stimulant, it is advisable to attempt a second or third trial with other stimulants.

Each of these stimulant medications has the common adverse effects of decreased appetite, insomnia, headache, stomachaches, and irritability.

Dosages should be adjusted for each child depending on body weight, degree of impairment, and specific symptoms targeted for improvement. Children with ADHD of the predominantly inattentive type have been shown to respond well to low doses of methylphenidate. Children with ADHD, combined-type or predominantly hyperactive, have shown more positive response at moderate to high doses of methylphenidate.

Please refer to Table I in the original guideline document for information on dosing, titration, and adverse effects of first line ADHD medications.

25. Alternative Medication(s) Trial(s)?

When adequate stimulant trial is unsuccessful due to either poor response or side effects in spite of adjustment, or if associated comorbidity, alternative medication trials may be considered. Second line medications for ADHD therapy in these situations commonly include tricyclic antidepressants (imipramine, desipramine), alpha adrenergic agonist (clonidine), and a nontricyclic antidepressant (bupropion).

At this point, due to increased side effects and more intense monitoring, the primary clinician is directed out of guideline and may consider subspecialty consultation depending upon individual knowledge and expertise. For

information on Alternative Medication(s) Trial(s) refer to Table II in the original guideline document.

27. Maintenance and Continuing Care

Attention Deficit Hyperactivity Disorder may have an evolving impact on a child's or adolescent's learning or behavioral success. It is a condition that is significantly related to each child's environment (home, school, etc.) as well as to the specific demands placed upon the child or adolescent. The ability of the individual to develop compensation skills and success over time is related to these factors, as well as the presence or absence of comorbid conditions.

Recent evidence suggests that worsening clinical status during adolescence may more likely be due to environmental and/or comorbid causes, instead of inadequate psychostimulant medication dosage. The clinician should evaluate these possibilities before prescribing higher doses of stimulants to adolescents. For these reasons, close monitoring and follow-up is recommended for all children and adolescents diagnosed with ADHD, whether or not medication is utilized.

Frequency: closely by phone during trial and first several weeks; clinic visit after trial to review care plan; 2 times per year depending on individual case (preferably during school year)

These visits allow for review and management of the following areas:

Medical:

- Measurement

  height, weight, blood pressure, pulse

- Medication

  dosage, timing, coverage priorities, duration

  Before making dosage adjustments or switching medications, the patient's adherence to current regimen should be addressed.

- Positive attributes of medication
- Side effects and their management (see Table III in the original guideline document)
- Laboratory as indicated
- Behavior rating scales

  especially if problems and anticipated medication adjustment

- Alternative/complimentary medicine

Increasingly, parents are considering the use of alternative/complimentary therapies for children with ADHD. Certain therapeutic interventions, such as

the use of herbal, botanical, and other nutraceutical agents, have the capacity to interact with psychotropic medications including stimulants, selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs), among others. Therefore, it is important for pediatric health care providers to inquire about the use of these agents by children under their care in a non-judgmental fashion. Parents can then be educated appropriately about potential risks, benefits, side effects, and drug interaction possibilities associated with a certain therapy.

Psychosocial:

- Family functioning
- Home behavior management
- Peer relationships
- Outside activities

Educational:

- ADHD symptoms
- Child-teacher relationships, social functioning, general attitude
- Academic performance, homework and study skills
- Current interventions and supports
- Review IEP or section 504 plan if appropriate

Psychological:

- Perception of ADHD and treatment
- Self esteem issues
- Personal strengths and successes

Anticipatory Guidance:

- Immediate and long-term expectations
- Study/organizational skills
- Behavior management
- Updated reading materials and advocacy issues

Transitioning to Adulthood:

- Identify adult health care provider for care transfer (this may require coordination with college health service).
- Prioritize treatment to address target symptoms, level of impairment, and available resources (multiple modalities frequently useful), patient participation necessary.
- Emphasize vocational evaluation, counseling, and training as well as time management skills, organization, and study skills.
- Discuss relationship issues.
- High index of suspicion for comorbidity
- Address risk of medication abuse by patient and peers.
- Stimulants may be less effective; consider alternative medications if indicated.

Revise multimodal care management plan as needed.

Evidence supporting this recommendation is of classes: A, C, D, R

Definitions

Classes of Research Reports

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case reports

B. Reports that Synthesize or Reflect upon Collections of Primary Reports

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided for:

- Evaluation of Attention Deficit Hyperactivity Disorder
- Management of Attention Deficit Hyperactivity Disorder

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The guideline contains an annotated bibliography and discussion of the evidence supporting each recommendation. The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- General to guideline: Accurate diagnosis and effective management of patients presenting with learning or behavior problems and suspected of attention deficit hyperactivity disorder (ADHD) in the primary care setting
- Specific to intervention: Stimulant medications are effective treatment for 70 to 80% of children with ADHD. Treated children exhibit more purposeful, goal-oriented behavior, focused attention, lessened impulsiveness and decreased motor activity.
- Children with ADHD of the predominantly inattentive type have been shown to respond well to low doses of methylphenidate.
- Children with ADHD, combined-type or predominantly hyperactive, have shown more positive response at moderate to high doses of methylphenidate.

POTENTIAL HARMS

- The most common side effects of stimulant medication include anorexia, insomnia, headache, stomach ache, and headaches; less commonly rebound irritability, dysphoria, agitation, tics, and growth impairment are seen. Growth suppression occurs only rarely, and is likely secondary to reduced calorie intake.
- In addition, it is generally felt that, in individual patients, psychostimulants may unmask or exacerbate tics. However, evidence from two recent studies suggests that psychostimulants may not be associated with tic frequency or severity.
- Second line medications used in the treatment of attention deficit hyperactivity disorder (ADHD), such as tricyclic antidepressant (imipramine, desipramine), alpha adrenergic agonist (clonidine, guanfacine) and nontricyclic antidepressant (bupropion). have the following possible predominant adverse effects:
    - Tricyclic antidepressant: Cardiac conduction disturbances, dry mouth, urinary retention, and headache
    - Alpha adrenergic agonist: Sedation, rashes with skin patches, orthostatic hypotension in less than 5% of those treated, fatigue, headache, and insomnia

    - Nontricyclic antidepressant (bupropion): Sedation, constipation, dryness of mouth, may lower seizure threshold
- Recent issues related to the occurrence, severity and incidence of liver complications associated with pemoline (Cylert) use suggest that this agent may not be an appropriate first line therapy in attention deficit hyperactivity disorder (ADHD).

CONTRAINDICATIONS

CONTRAINDICATIONS

Absolute contraindications to the use of stimulants include psychosis, certain cardiovascular conditions, or previous untoward reactions to stimulant medication.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they form a guideline action group.

In the action groups, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

The following detailed measurement strategies are presented to help close the gap between clinical practice and the guideline recommendations.

Priority Aims and Suggested Measures for Health Care Systems

1. Increase the use of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) or Diagnostic and Statistical Manual for Primary Care (DSM-PC) criteria and screening for other primary conditions and comorbidities for patients newly diagnosed with attention deficit hyperactivity disorder (ADHD).

   Possible measures of accomplishing this aim:

   a. Percentage of patients newly diagnosed with ADHD whose medical record contains documentation of DSM-IV or DSM-PC criteria
   b. Percentage of patients newly diagnosed with ADHD whose medical record contains documentation of screening for other primary conditions and co-morbidities, as defined in the guideline
2. Improve the primary care use of psychostimulant medications through a systematic, uniform approach.

   Possible measures of accomplishing this aim:

   a. Percentage of patients diagnosed with ADHD whose medical record contains documentation that the clinician performed an open label or placebo controlled stimulant medication trial
   b. Percentage of patients diagnosed with ADHD and on psychostimulant medication whose medical record contains documentation of a follow-up visit at least twice a year
3. Increase the number of clinicians who are utilizing a multimodality approach in treatment planning for children with ADHD.

   Possible measures of accomplishing this aim:

   a. Percentage of patients diagnosed with ADHD whose medical record contains documentation that they discussed parental resources for managing children with ADHD (e.g., parent training groups, videos, books, psychology referral)
   b. Percentage of patients diagnosed with ADHD whose medical record contains documentation that the clinician discussed the need for school based supports and educational service options for children with ADHD

Possible Success Measure #1a:

Percentage of patients newly diagnosed with ADHD whose medical record contains documentation of DSM-IV or DSM-PC criteria

Population Definition

All children and adolescents from kindergarten through 12th grade (ages 5 to 18) diagnosed with ADHD

Data of Interest

# of medical records of newly diagnosed ADHD patients with documentation of DSM-IV or DSM-PC criteria
Total # of medical records reviewed

Numerator/Denominator Definitions

Numerator:
Refer to the original guideline document for a list of International Classification of Diseases, Ninth Edition (ICD-9) ADHD codes. Newly diagnosed is defined as documented ADHD in past 6 months and no documentation of ADHD codes in the previous 6 to 12 months. Documented is defined as any evidence in the medical record that DSM-IV or DSM-PC criteria were addressed. DSM-IV or DSM-PC criteria include evaluation for:

1) symptoms; 2) onset; 3) duration; 4) pervasiveness; 5) impairment.

Denominator:
Refer to the original guideline document for a list of ICD-9 ADHD codes. Newly diagnosed is defined as documented ADHD in past 6 months and no documentation of ADHD codes in the previous 6 to 12 months.

Method/Source of Data Collection

Medical groups may identify their patient samples in several ways. One way is to use their own available information systems to identify patients from all payers. A minimum sample of 10 charts is suggested.

Time Frame Pertaining to Data Collection

Suggested data collection time frame is monthly.

Notes

Depending upon the size of the medical group's ADHD population, they may choose to collect the data on a less frequent basis.

Possible Success Measure #2b:

Percentage of patients diagnosed with ADHD and on psychostimulant medication whose medical record contains documentation of a follow-up visit twice a year

Population Definition

All children and adolescents from kindergarten through 12th grade (ages 5 to 18) diagnosed with ADHD

Data of Interest

# of medical records of ADHD patients on psychostimulant medication with documentation of a follow-up visit twice a year
Total # of ADHD patients on psychostimulants whose medical records reviewed

Numerator/Denominator Definitions

Numerator:
Refer to the original guideline document for a list of ICD-9 ADHD codes. Diagnosed is defined as documented ADHD in the previous 6 to 12 months. Documented is defined as any evidence in the medical record that a follow-up visit occurs in the past 12 months. A follow-up visit for ADHD includes documentation of the following twice a year: height, weight, a discussion of medication, a discussion of school progress, and a care plan should be identified.

Denominator:
Refer to the original guideline document for a list of ICD-9 ADHD codes. Diagnosed is defined as documented ADHD in the past 6 to 12 months. Psychostimulant medications include: methylphenidate (Ritalin), Dextroamphetamine (Dexedrine) and Pemoline (Cylert).

Method/Source of Data Collection

Medical groups may identify their patient samples in several ways. One way is to use their own available information systems to identify patients with ADHD from all payers. A minimum sample of 10 charts is suggested. It is recommended that a chart review be done to determine follow-up visits for ADHD.

Time Frame Pertaining to Data Collection

Suggested data collection time frame is monthly.

Notes

Depending upon the size of the medical group's ADHD population, they may choose to collect the data on a less frequent basis.

Possible Success Measure #3a:

Percentage of patients diagnosed with ADHD whose medical record contains documentation that the clinician discussed the need for school based supports and educational service options for children with ADHD

Population Definition

All children and adolescents from kindergarten through 12th grade diagnosed with ADHD

Data of Interest

of medical records of ADHD patients with documentation of discussion of the need for school based supports and educational service options
total # of ADHD patients whose medical records are reviewed

Numerator/Denominator Definitions

Numerator:
Refer to the original guideline document for a list of ICD-9 ADHD codes.
Diagnosed is defined as documented ADHD in the previous 6 to 12 months.
Documented is defined as any evidence in the medical record that a clinician discussed school based supports and educational service options.

Denominator:
Refer to the original guideline document for a list of ICD-9 ADHD codes.
Diagnosed is defined as documented ADHD in the past 6 to 12 months.

Method/Source of Data Collection

Medical groups may identify their patient samples in several ways. One way is to use their own available information systems to identify patients with ADHD from all payers. A minimum sample of 10 charts is suggested.

Time Frame Pertaining to Data Collection

Suggested data collection time frame is monthly.

Notes

Depending upon the size of the medical group's ADHD population, they may choose to collect the data on a less frequent basis.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Mar. 66 p. [147 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1997 Oct (revised 2003 Mar)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT SpecialtyCare, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, RiverWay Clinics, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians

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GUIDELINE COMMITTEE

Committee on Evidence-Based Practice

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, the Institute for Clinical Systems Improvement (ICSI) has adopted a policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. It is not assumed that these financial interests will have an adverse impact on guideline content. They simply are noted here to fully inform users of the guideline.

All work group members: none declared.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Institute for Clinical Systems Improvement (ICSI). Diagnosis and management of attention deficit hyperactivity disorder in primary care. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2000 Jan. 60 p.

The next scheduled revision will occur within 18 months.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Diagnosis and management of attention deficit hyperactivity disorder in primary care. In: ICSI pocket guidelines. April 2003 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2003 Mar p. 234-42.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on June 30, 1999. The information was verified by the guideline developer on August 4, 1999. This summary was updated by ECRI on May 15, 2000 and December 30, 2003.

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